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**Socio-Structural Effects on Educational Poverty of Young Immigrants  
An International-Comparative Perspective.**

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***Abstract***

In the course of increasing immigration many western countries are confronted with the challenge of integrating growing immigrant populations. A prerequisite of long-term integration is educational success in the host country. As recent cross-national surveys show, some countries fare better than others when it comes to educational equality between immigrants and natives. In the majority of the countries, a significant part of young immigrants is educationally poor, which means that their social integration is at risk. Previous explanations of integration and education mainly focused on individual resources, not on opportunities and restrictions that arise from the social structure of the host country. In this paper, we combine educational sociology with the political economy of the welfare state. We assess the influence of national institutions on individual educational poverty of immigrants. Our results suggest that income inequality in the host country seems to increase the risk of educational poverty, whereas the size of the immigrant population reduces the individual risk. Redistribution in terms of social contributions protects immigrants from being educationally poor. If average achievement of natives is controlled for, the effect of redistribution is no longer significant, suggesting that high performing countries are also countries with more redistribution.

***Introduction***

International migratory movements are a constituent part of human history. However, since the end of the twentieth century, border crossing migration reached a new dimension. This is not only a consequence of the new political world order but also a side effect of ongoing internationalisation processes. At the same time, many industrialised countries face the growing challenges of demographic changes. In order to maintain sustainable social security systems and economic prosperity, these countries will have to rely on immigration – and a successful social integration of immigrants. Social integration is to be understood as a process of inclusion in the functional systems of the host society, most importantly the labour market. A precondition of this central dimension of integration is the availability or acquisition of educational credentials. Hence, successful educational attainment of immigrants and their offspring in the educational systems of their host countries serves as a long term indicator of structural integration. However, research on ethnic educational inequality has repeatedly shown that immigrants in most countries lack behind their native peers. The degree of

inequality is quite pronounced in a number of countries: for example, the OECD PISA study 2009 has shown that one third of young immigrants in Germany do not score higher than the first proficiency level in reading, which is defined as *educational poverty* (Solga 2009)<sup>1</sup>. By comparison, only 12 percent of native Germans fall into this category. Being educationally poor at age 15 decreases the odds of following a higher education track and increases the risk of being unemployed in the future. From a society's point of view, educational poverty entails substantial follow-up costs.

International comparative studies have shown that learning gaps between natives and immigrants vary across countries – even if relevant factors such as social status and language use are controlled for. German immigrants whose parents have completed lower secondary education reached 411 points on the reading scale in PISA 2009, whereas Canadian immigrants with the same level of parental education scored more than 70 points higher. Hence, it is assumed that institutional factors at the country level shape learning and integration processes. Due to substantial differences regarding the educational integration of young immigrants across countries, we assume that individual educational poverty corresponds with specific features of national institutions and social structures. We believe that educational poverty is an individual, but institutionally shaped feature (Hinz et al. 2004). In our paper we aim at answering the question which institutions and structural features of host countries influence educational success or failure of young immigrants.

Our analysis links to sociological research devoted to the causes of internationally varying integration outcomes and to hypotheses and findings of comparative welfare state research. We analyse the contextual factors at the country level in two different dimensions: *equality* and *diversity*. *Equality* refers to the degree of redistribution and income equality in a country, *diversity* comprises heterogeneity and size of the immigrant population. We argue that these societal dimensions influence educational investment decisions of immigrant families. In the next section we summarise existing research on institutional effects on education. Subsequently we describe our theoretical model based on the subjective expected utility theory. In a next step we describe our database and methods and present some descriptive results. We test our model with multilevel regressions that estimate the influence of equality and diversity of host countries on the risk of being educationally poor, controlled for relevant factors at the household and school level.

### ***Why do integration outcomes vary cross nationally? Theory and research***

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<sup>1</sup> This and the following figures are results of own computations with PISA 2009 data.

Our analysis builds on two interdisciplinary fields of research. First, we draw on research approaches and findings from the field of rather micro-oriented sociological comparative research on educational attainment of immigrants. Second, we refer to comparative political economy approaches that examine the interaction between immigration and welfare state institutions. Research in the first field has become more elaborated with the availability of large scale educational assessments such as TIMSS/PIRLS and PISA. Results of these studies as well as further scientific research have shown that there are significant differences between countries with regard to educational achievement of immigrants (Buchmann & Parrado 2006; Stanat & Christensen 2006). Empirical findings suggest that these differences are not only due to a more favourable composition of immigrant populations (Marks 2005; Schnepf 2007). In many countries, for example France, the Netherlands and Switzerland, immigrants perform significantly worse than natives, even when language use and socioeconomic status are controlled for (Schnepf 2007: 544). Furthermore, different studies suggest the existence of distinct patterns: immigrants in English speaking countries perform better in relation to their native peers than in most continental European countries (Entorf & Minoiu 2004). A first approach in order to explain the residual effects of immigrant status on educational achievement was to link patterns of ethnic educational inequality with existing typologies of immigration or integration regimes. It has been assumed that traditions of immigration or incorporation are likely to shape ethnic inequality as well. Some studies could show that “exclusionary regimes” produce the most pronounced learning gaps between immigrants and natives whereas “inclusionary regimes” seem to be most successful in integrating immigrants at school (Buchmann & Parrado 2006: 347). Although these findings contribute to our understanding of interactions between institutions and integration processes, they could not clarify which institutions actually play what kind of role in immigrant integration. As most of the former empirical models measured institutional structures by including dummy variables indicating specific countries or group of countries we do not gain insight about the mechanism that creates the observed effects of countries. One solution for this shortcoming are multilevel models that include measured characteristics of countries as independent variables. Levels, Dronkers and Kraaykamp (2008) applied such a multilevel regression design and could show that traditional immigration countries do not have a significant effect on mathematical achievement of immigrants if individual characteristics as well as features of the immigrant community and their origin countries were controlled for – thereby contradicting findings of previous findings. They find that the average socioeconomic capital

and the size of the ethnic community have positive effects on the educational achievement of immigrants. But still the independent variable “traditional immigration country” remains a proxy variable that does not capture the actual institutional characteristics of the respective countries.

We build upon these findings but enhance our perspective by referring to research that analyses the complex interplay between processes of immigration and integration welfare state institutions. The repercussions of ongoing immigration for the sustainability of social security systems have been intensively discussed since the 1990ies (Bommes & Geddes 2000; Boeri, Hanson & McCormick 2002; Banting & Kymlicka 2006). This field of research can be broadly divided into two streams: one that treats the welfare states as an independent variable shaping immigration and integration processes and another one that sees the welfare state and its sustainability as dependent on immigration and integration. The first perspective that focuses on the influence of welfare states on *immigration* processes became prominent with the “welfare magnets” hypotheses (Borjas 1990). Based on human capital theory this approach states that strong welfare states tend to attract less qualified immigrants who are more likely to depend on welfare. This model thus assumes that migration decisions are mainly determined by expectations of the possible income in the destination country. Immigrants are positively selected if the degree of income inequality in the destination country is higher than in the origin country (Borjas 1994: 1689). This assumption neglects the impact of institutional constraints such as immigration regulations as well as considerations about the meaning of networks for migration decisions (Nannestad 2007: 516). Empirical evidence regarding the welfare magnets thesis so far is mixed (ibid. 519).

Building upon the welfare magnets hypothesis, the relation between welfare state institutions and *integration* processes has mainly been discussed from a moral hazard perspective. Welfare states with a high degree of redistribution always encourage free riders, among immigrants as well as among natives. However, the prospects of generous social security might reduce incentives for immigrants to invest in their integration. Koopmans (2010) points out that immigrants in welfare states with strong de-commodification have lower incentives to invest in their human capital (e.g. through language learning) as the coercion to participate in the labour market is lower. Furthermore, the relative deprivation that results from being on welfare might be lower for immigrants than for natives since immigrants refer to the situation in their origin countries whereas natives compare with other natives. According to this assumption one would expect bigger problems of structural integration in strong welfare states. Indeed, empirical research has shown that labour market participation of immigrants is

higher in liberal welfare regimes with flexible labour market regulation (Kogan 2006). On the other hand there is evidence that labour market integration does not prevent immigrants from poverty and deprivation. Accordingly, immigrants are better-off in strong welfare states if one considers poverty rates and the availability of social rights (Morissens & Sainsbury 2005).

Most liberal welfare regimes have a long tradition of immigration, as such they exhibit efficient institutions that regulate immigration, but they also often pursue a policy of *laissez faire* when it comes to integration. As a consequence, they encourage segregation and compel reliance on family structures, thereby increasing the probability of segmented assimilation outcomes.

It thus remains an open question which form of welfare state fosters the structural assimilation of immigrants and maintains societal integration in the long run. In addition, there is not yet enough empirical evidence regarding the effect of institutions on different dimensions of individual integration. Previous empirical research focusing on the relation between welfare states and immigration and integration mainly relied on aggregated data (Morissens and Sainsbury 2005). With this kind of research design it is not possible to distinguish the effects of single institutions. Thus, one can not tell if high unemployment rates in strong de-commodifying welfare states were a result of negative selection at immigration (*welfare magnets*) or of unfavourable incentives for assimilation (*moral hazard*).

In addition, previous research neglected the experiences of the second generation, which would allow a long-term perspective on integration. Lastly, most of the studies that have been conducted so far did not explicate the individual mechanisms that lead to measured integration outcomes at the macro level. Therefore, we aim at developing a macro-micro model by arguing that egalitarian welfare regimes provide better opportunities for immigrant families to invest in their children's education, as the prospects of intergenerational social mobility are perceived as relatively high. We will elaborate on this argument in the next section as it serves as the basis of our empirical analyses.

### ***An explanation of integration processes and educational decisions***

Educational poverty of immigrants can be conceived as a special case of individual social integration. In order to explain immigrant integration we draw on the model of intergenerational integration as developed by Hartmut Esser (2006, 2008). This approach serves as a valuable starting point for our theoretical analyses as it provides a synthesis of the most important theoretical accounts of immigrant integration, namely classical assimilation

(Park 1950), segmented assimilation (Portes & Zhou 1993; Portes & Raumbaut 2001) and new assimilation (Alba & Nee 1997, 2003).

The model takes a subjective expected utility (SEU) perspective and assumes that immigrants decide whether to orient their action towards the receiving context (rc-option) or towards the ethnic community (ec-option). These (rc- or ec-oriented) actions can be conceived of as investments in the production of desirable goals and goods (Esser 2008: 88). As opposed to natives, first and second generation immigrants often face the situation that relevant strategic resources for the production of their goals have been devaluated as a result of the migration process. As a consequence, these resources (e.g. the host country language or educational credentials) have to be reconstituted (e.g. through language learning) before they can be deployed for their part in the investment process. As empirical analyses show (Esser 2006), these re-investments in host country specific resources do not necessarily occur, i.e. under certain (contextual) circumstances immigrants remain oriented towards their ethnic community. The retention of the ec-option is especially likely in countries that exhibit pronounced ethnic seclusion. Ethnic seclusions can be conceived of as limited opportunities such as restricted access to housing or labour markets for immigrants.

Theories on assimilation and ethnic stratification thus have to explain why immigrants chose either the rc- or the ec-option, thereby creating different structural integration outcomes at the macro level. The model of intergenerational integration assumes that immigrants will tend towards the receiving context (e.g. invest in language learning) if the subjective evaluation of the utility that arises from the benefit of the investment (e.g. income) weighted with the probability of success, outweighs the costs and the utility of the status quo (ethnic retention).

The benefits of both alternatives (ec- or rc-option), the probabilities of their success and the costs depend on the respective empirical conditions in the receiving country, the ethnic community and on the available individual resources (Esser 2008: 89). These *marginal conditions* that structure individual expectations and evaluations have been neglected in many empirical accounts as the main focus was directed towards individual resources and ambitions. The segmented assimilation theory was among the first to recognise the importance of the receiving context for the production of different integration outcomes.<sup>2</sup> Esser's model of intergenerational integration builds upon this approach. Particularly, ethnic diversity in the host county and the size of the immigrant population are considered to serve

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<sup>2</sup> The theory of segmented assimilation conceives social, political and societal conditions („contexts of reception“) in relation with individual immigration experiences as decisive for the respective mode of incorporation and the chosen path of assimilation. For instance, government policy towards an immigrant group can be receptive, indifferent or hostile. Likewise, the attitudes of the host society can be free of prejudice or shaped by social distance (Portes & Boröcz 1989; Portes & Rumbaut 1990:91).

as crucial marginal conditions for integration. Countries with a traditionally low ethnic diversity are expected to produce ethnic seclusions, since homogeneous immigrant groups enable political mobilisation and institutional completion (Breton 1964). Additionally, bigger ethnic groups make contacts with natives less likely und might be an impediment for language learning or labour market access (Esser 2008: 89).

Educational success – or in the case of educational poverty – educational failure of immigrants can now be conceived of as a result of individual assimilative decisions. Thus we have to explain the individual investment decisions in education. The sociology of education developed formal models that allow an analytic reconstruction of these investment decisions (Boudon 1974: 29f; Becker 1993; Breen & Goldthorpe 1997; Esser 1999: 266-275; Becker 2000). These models take into account the expected probability of an amortisation of the costs and the expected benefit of education. Recently, also institutional and socio structural characteristics of destination countries have been integrated into the analyses of immigrant’s educational attainment (Levels, Dronkers & Kraaykamp 2008: 883). It is assumed, that the expected benefits and probabilities of amortisation of immigrants and their offspring depend on institutions and social structures of host countries. The social security system is one part of this relevant host country structure. It is not yet clear in which way welfare state institutions influence educational investment decisions. The prospects welfare benefits without labour market participation may influence the immigrant’s evaluation of the costless and secure status quo (ethnic retention). Strong welfare states are likely to foster external social closure, if labour market regulation (e.g. protection from dismissal) or high non-wage labour costs decrease incentives for employers to hire “risky” employees such as immigrants.

But how is the situation for first generation immigrants who decide about investments into their children’s education? Building upon the model of intergenerational integration, we consider two alternatives: “*sq*” represents the decision of non-investment into receiving context resources, e.g. a retention of the status quo. “*In*” depicts the decision for an educational investment, for example the aim to reach a certain degree (Esser 2006: 40). The selection of one of these alternatives can be formally expressed in the logic of the subjective expected utility theory. We divide the expected probability of success (e.g. the amortisation of the investment decision) into two parts: on the one hand there is a subjective probability to acquire the aspired degree [ $p(\textit{degree})$ ], on the other hand there is a subjective probability to deploy this degree in order to reach a certain status (e.g. to accomplish upward social mobility [ $p(\textit{mobility})$ ]). This differentiation has not been considered so far.

$$EU(sq)=U(sq) \tag{1}$$

$$EU(in)=p(in)U(in)+(1-p(in))U(sq)-C(in) \quad (2)$$

$$\text{whereby: } p(in)=p(\textit{degree})p(\textit{mobility}) \quad (3)$$

From an immigrant's perspective, the expected utility of the status quo in equation (1) is known and secure.<sup>3</sup> The expected utility of the investment decision in equation (2) is insecure, since the individual does not know with certainty if the educational investment will be amortised through the acquisition of the aimed degree [ $p(\textit{degree})$ ] and through the achievement of an adequate social position [ $p(\textit{mobility})$ ]. Thus, we assume that the probability weight of the benefit in equation (2) consists of two components that are multiplicatively combined. According to this,  $p(in)=0$  if either  $p(\textit{degree})$  or  $p(\textit{mobility})$  equals zero. Thus, the subjective expected probability of the investment's amortisation is low if either the chances for the acquisition of the aimed degree [ $p(\textit{degree})$ ] are low or if the likelihood of upward mobility through educational credentials [ $p(\textit{mobility})$ ] is low.

Drawing on this assumption we can derive hypotheses about the impact of welfare state institutions on the production of educational poverty. These hypotheses are mainly directed towards the parameter  $p(in)$ : liberal welfare states with an unequal social structure provide attractive positions at the upper end of the income distribution. However, the likelihood of acquiring these positions is relatively small, especially if they are occupied by natives. By contrast, the probability of realising upward social mobility is higher in welfare regimes with a more equal social structure and a high degree of redistribution where insecurity about an amortisation of the educational investment is lower. In other words: the likelihood of a maximised benefit by reaching a top-position might be reduced in egalitarian regimes, but the chances of an upward mobility for the second generation are expected to be markedly higher. If the investment fails, immigrants in strong welfare states are less dependent on the solidarity of the ethnic community, thus the likelihood of ethnic closures and self-segregation is lower. If immigrants in liberal welfare states neglect their ethnic ties by focusing on the acquisition of receiving context capital they are threatened by marginalisation if the risk of a failure of the investment is high. Further, it can be assumed that the comprehensive public education systems in strong welfare states along with the prospects of being secured by welfare institutions will increase the likelihood to choose the educational investment, especially for lower status immigrant groups. This assumption goes back to findings of educational research that have shown that families with lower social status overestimate the cost parameter while underestimating the possible benefits of education (Boudon 1974; Erikson & Jonsson 1996;

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<sup>3</sup> As a simplification we also assume full information for the utility of the status quo in the future.



Becker 2000). By contrast, the chances of an amortisation of the receiving context investment is lower in weak welfare states with strong inequality since  $p(\textit{degree})$  as well as  $p(\textit{mobility})$  are lower under these conditions. Why should a costly investment be undertaken if the chances of educational success and the likelihood to reach a higher status position are low? Under these circumstances, immigrants are likely to prefer the alternative that has a lower benefit but is secure and costless – which is the retention of the ethnic option (sq). Since this orientation towards the ethnic community inhibits the acquisition of a cultural assimilation, the risk of educational poverty is higher. In contrast to moral hazard assumptions we thus assume a lower risk of educational poverty for second generation immigrants in countries with high re-distribution (*equality*) and diversified ethnic communities (*diversity*).

### ***Data and Methods***

In order to test our hypotheses empirically we draw on data from the OECD PISA 2009<sup>4</sup> study. This survey is especially suited for our research question since it comprises about 47,000 immigrants in more than 60 countries. PISA seeks to measure competences of 15 years old students in order to assess their capacities to face the challenges of contemporary knowledge-based economies. The assessment focuses on three dimensions: reading, mathematics and science. Competence is measured using continuous scales<sup>5</sup> and so-called “proficiency levels”. Performing on a given proficiency level corresponds to the capability of solving tasks with a certain difficulty. If a student reaches a certain level, he is able to solve more than 50 percent of tasks that correspond to this level as well as tasks that correspond to lower levels. Reading competence is divided in five proficiency levels in PISA. Students that do not reach the first proficiency level in reading are not able to develop the most basic reading competencies - they are “functionally illiterate”. Students that reach the first proficiency level are capable of completing only the least complex reading tasks in PISA, such as locating a single piece of information, identifying the main theme of a text or making a simple connection with everyday knowledge. They only acquired the most basic reading competencies and thus have to be considered as “educationally poor” if one considers the requirements for successful labour market participation in modern societies (Solga 2009: 400). Thus, our dependent variable “educational poverty” is a dummy variable for students who do not reach the second proficiency level (1=educational poor).

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<sup>4</sup> Programme für International Student Assessment

<sup>5</sup> The competence scales are standardised to a mean of 500 points (OECD average), the standard deviation is 100.

We measure *diversity* of host countries with two variables: the share of immigrants<sup>6</sup> as well as the degree of heterogeneity within the immigrant population regarding size and quantity of different ethnic communities<sup>7</sup>. In order to capture the impact of welfare state institutions and social structure (*equality*) we draw on the gini index of income inequality and on the amount of social contributions as a measure of re-distribution<sup>8</sup>. We further include a dummy variable that indicates if a country pursues a policy that seeks to increase immigration since we expect that these countries provide advantageous integration conditions. As a means to control for general “level effects” of an education system we ran further models that included the share of educationally poor natives, the mean reading score of natives as well as the range of reading achievement<sup>9</sup> and the gross domestic product of a country.

In order to isolate the context effects at the country level we control for a number of relevant characteristics of the household and school level. These are a dummy variable to distinguish the second generation from first generation immigrants (1=second), a dummy variable for gender (1=girl), the PISA index of economic, social and cultural status (ESCS)<sup>10</sup> and a dummy variable indicating foreign language use at home. We expect better outcomes (e.g. lower odds of being educationally poor) for the second generation, lower risks of educational poverty for higher status students and a higher risk of being educationally poor for those who mainly speak a foreign language at home.

At the school level we control for private schools (1=private), the autonomy of the schools regarding the recruitment of teaching staff (1=autonomous), the location of the school (1=large city), the share of immigrants at school, the average socioeconomic status of the school and the range of reading scores at the school measured as the difference between the fifth and ninety-fifth percentile (the latter three have been aggregated from student data). We expect better outcomes for private and autonomous schools since these features are supposed to lead to better teaching conditions due to more competition and higher flexibility and more funding. The share of immigrants at school should not have a significant effect as long as the average socio-economic status and the average achievement level are controlled for – otherwise this would be a hint for discrimination or other impeding factors.

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<sup>6</sup> United Populations Division, International Migrant Stock 2008, <http://esa.un.org/migration/index.asp?panel=1>

<sup>7</sup> We calculated an index that measures the sum of the squared proportions of immigrant groups (Herfindahl-Index). The database comprised the proportional values for the 10 biggest immigrant groups in a country.

Source: Global Migrant Origin Database:

[http://www.migrationdrc.org/research/typesofmigration/global\\_migrant\\_origin\\_database.html](http://www.migrationdrc.org/research/typesofmigration/global_migrant_origin_database.html)

<sup>8</sup> Both indicators from World Bank World Development Indicators:

[http://databank.worldbank.org/ddp/home.do?Step=2&id=4&DisplayAggregation=N&SdmxSupported=Y&CNO=2&SET\\_BRANDING=YES](http://databank.worldbank.org/ddp/home.do?Step=2&id=4&DisplayAggregation=N&SdmxSupported=Y&CNO=2&SET_BRANDING=YES)

<sup>9</sup> The range of reading achievement is defined as the difference between the 95<sup>th</sup> and 5<sup>th</sup> percentile of the reading score distribution.

<sup>10</sup> <http://stats.oecd.org/glossary/detail.asp?ID=5401>

Our research question is directed towards the effect of country characteristics on student performance, controlled for characteristics of the student’s families and schools. This entails, that we are examining nested data: students are nested in schools that are nested in countries. This data structure requires techniques that account for the fact that students in schools and schools in countries might resemble each other, meaning that the individual or school related error terms of a regression model might be correlated. Multilevel regression techniques are able to rule out this circumstance, thereby allowing for an account of contextual effects (Snijders & Bosker 1999; Goldstein 2003; Luke 2004). Since our dependent variable is dichotomous, we apply logistic hierarchical regressions using the software package MLwiN. All variables are centred around their grand mean and cases with missing values on any of our variables were excluded from the analyses. The PISA design entails varying case numbers at the country level, which involves a standardisation of the final student weight<sup>11</sup>. The models were set up for all five plausible values<sup>12</sup>.

The model can be depicted as follows:

$$\text{logit}(\text{Educational\_poverty}_{y_{1-5}})_{ijk} = \beta_{0jk} + \beta X_i \quad (4)$$

$$\beta_{0jk} = \beta_0 + \gamma W_{jk} + \gamma Z_k + v_{0k} + u_{0jk}$$

where  $X$  represents the independent variables at the student level,  $W$  the independent variables at the school level and  $Z$  the independent variables at the country level. The subscript  $i$  denotes students,  $j$  schools and  $k$  countries.

In logistic models, the residual variance at the lowest level is fixed to  $\pi^2/3$ . Including a further covariate  $x_k$  will influence the vector of coefficients  $\mathbf{x}$ , even if  $x_k$  and  $\mathbf{x}$  are uncorrelated (Mood 2010). This impedes the comparability of effects between nested models. Therefore, we will restrict the interpretation of the effects to their significance instead of explicitly comparing their change across different models.

Table 1 gives an overview about the variables and their distributions.

**Table 1: Variables and distributions**

	Minimum	Maximum	Mean <sup>1</sup>	Standard deviation	Frequency <sup>1</sup> (Dummy=1)
<b>Student and household, N= 23,968</b>					
Educational poor	0	1	.288		6,905
Second Generation	0	1	.530		12,704
Index of economic, social and cultural status (ESCS)	-6.036	3.534	-.267	1.064	

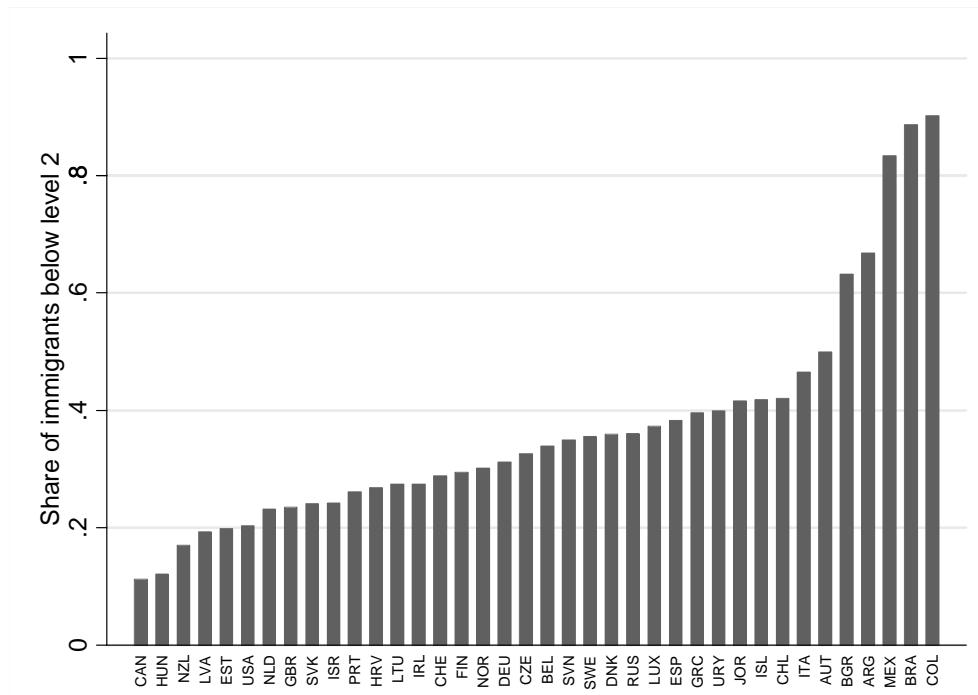
<sup>11</sup> See <http://www.oecd.org/dataoecd/59/32/39730315.pdf> for the derivation of the adjusted individual weighting variable.

<sup>12</sup> The threshold for the second proficiency level in reading corresponds to 407.47 points on the reading scale (PV1READ to PV5READ). Thus, our dependent variables are five dummy variables that indicate if the student’s plausible values are below this threshold.

Foreign language use	0	1	.473		11,349
Girl	0	1	.505		12,107
<b>Origin 7,454</b>					
Western Europe	0	1	.086		643
Middle East & Maghreb	0	1	.180		1,342
India, Pakistan, Afghanistan	0	1	.015		117
Eastern Europe	0	1	.018		138
Caribbean	0	1	.001		13
USA	0	1	.004		35
Africa (Sub-Sahara)	0	1	.055		416
Former Sovjet Union	0	1	.193		1,440
Former Yugoslavia	0	1	.212		1,587
South America	0	1	.032		241
South-East Asia, China	0	1	.008		63
Southern Europe	0	1	.190		1,419
<b>School, N=6,138</b>					
Private school	0	1	.141		3,383
Staff autonomy	0	1	.739		17,713
Location: large city	0	1	.462		11,075
Share of immigrants	0	1	.322	.239	
Range of reading scores	25.588	477.19	246.998	53.206	
Mean ESCS	-3.738	1.745	-.042	.624	
<b>Country, N=38</b>					
Gini index	25	58.273	34.13	4.932	
Social contributions	.187	57.23	27.925	14.023	
Share of immigrants	.2	45.9	17.837	10.608	
Homogeneity of immigrant community	.026	.840	.111	.135	
Immigration policy: raise	0	1	.251		6,030
Mean of reading score (natives)	402.172	538.814	496.469	29.797	
Share of educational poor natives	.072	.501	.176	.094	
Range of reading scores	262.22	368.356	307.092	22.203	
GDP per capita (in 1,000 US\$)	4.216	105.043	40.173	22.704	

<sup>1</sup> Mean values and frequencies for the school and country level are based on the absolute (e.g. student) N. Example: 3,383 students out of 23,968 students go to private schools, NOT 3,383 out of 6,138 schools are private schools. Mean values for origin variables are based on the smaller sample of students with information on origin. Example: 8,6 percent of all students with origin information are from Western Europe.

It is striking that almost one third of all immigrants have to be considered as being educationally poor. Only in one quarter of all countries less than 20 percent of immigrants fall into this category (see figure 1). The share of educationally poor immigrants varies between 11 percent in Canada and 90 percent in Colombia. About one half of our sample belongs to the second immigrant generation (born in country of test with foreign born parents). Almost 50 percent of all immigrants in our sample mainly speak a foreign language and 50 percent are girls. 14 percent of our sample go to private schools, and 73 percent are on a school with autonomy in staffing. The average share of immigrants at schools is 32 percent.

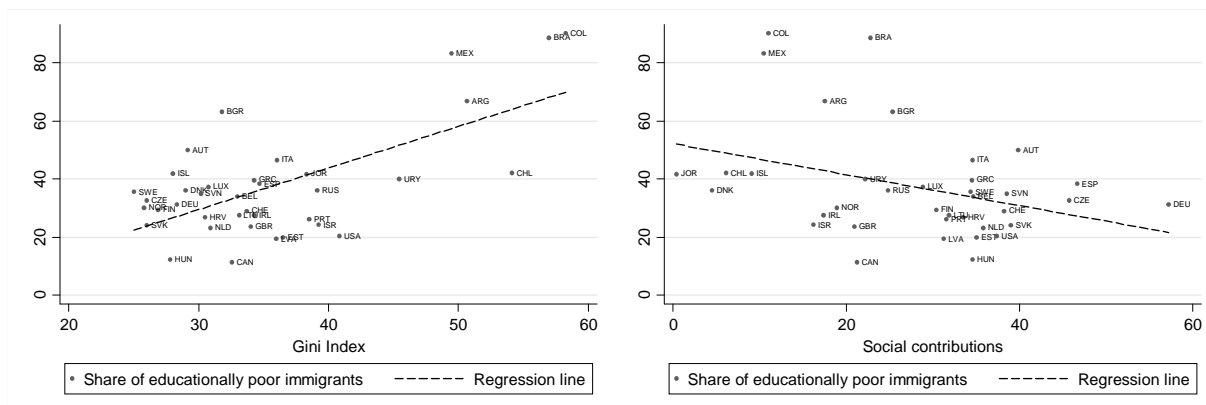


At the country level, the gini index varies from 25 in Sweden to 58 in Colombia. Social contributions vary from 0.3 percent to 57 in Germany. The share of immigrants is smallest in Colombia (0.2 percent) and largest in Jordan with almost 50 percent. Norway has an immigrant population that is the most diverse whereas Bulgaria has an almost homogeneous immigrant community. Argentina, Canada, Finland, Israel and Sweden seek to increase immigration. Argentina is the country where natives perform worst, whereas Finland is the highest performing country in our sample. Jordan is the country with the smallest GDP, by contrast Luxembourg has the highest productivity per head.

### **Results**

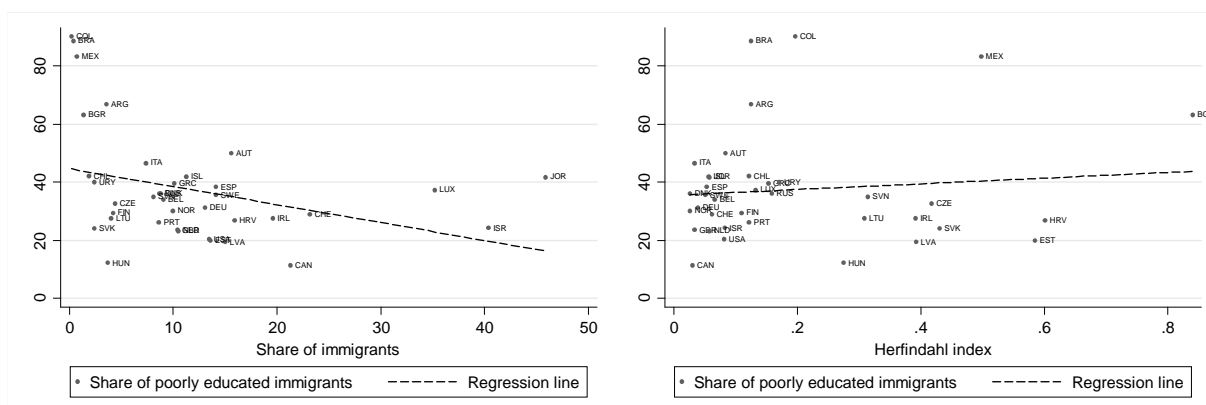
As a descriptive approach we plotted the relationship between the dependent variable “educational poverty” (aggregated at the country level) and the macro indicators of equality and diversity. We see that our hypotheses on equality can be confirmed in this bivariate approach. The higher the income inequality in a country, the higher seems to be the degree of educational inequality (measured as the share of educationally poor immigrants, Pearson's  $r=0.65$ ). By contrast, the higher the social contributions, the lower is the degree of educational poverty among immigrants ( $r=-0.36$ ).

**Figure 2a/b: Relationship between educational poverty and equality**



If we look at the diversity dimension we see that a bigger immigrant community seems to go in hand with lower educational poverty among immigrants ( $r=-0.34$ ). However, the relationship between homogeneity of the immigrant population and immigrant's educational poverty is not so clear.

Figure 3a/b: Relationship between immigrant's educational poverty and diversity



How does this picture change if we analyse educational poverty at the individual level, thereby controlling for composition effects? Our hierarchical model shows if our hypotheses are to be confirmed in a multivariate approach as well.

	Model 0	Model 1-5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
<b>Country</b>									
Gini Index		1.086***	1.068**	0.993	1.006	0.984	0.977	1.004	1.011
Social contributions		0.969*	0.986	0.984°	0.983*	0.988	0.989	0.982*	0.983°
Share of immigrants		0.970	0.978**	0.976**	0.979*	0.977**	0.976*	0.976**	0.978**
Homogeneity of immig. comm.		2.346	1.402	0.837	1.143	0.803	0.816	1.182	1.358
Policy: increase immigration		0.740	0.803	0.855	0.894	0.935	0.887	0.812	0.917
<b>School</b>									
Private school				1.160	1.221°	1.217	1.213	1.219°	1.219°
Autonomy (staffing)				0.912	0.881	0.889	0.892	0.882	0.882
Large City				1.011	1.023	1.019	1.018	1.024	1.025
Share of immigrants				0.899	0.874	0.891	0.898	0.873	0.872
Range reading achievement				1.007***	1.007***	1.007***	1.007***	1.007***	1.007***
Average SES				0.168***	0.217***	0.218***	0.218***	0.217***	0.218***
<b>Student</b>									
First Generation					Ref.	Ref.	Ref.	Ref.	Ref.
Second Generation					0.727***	0.727***	0.727***	0.728***	0.728***

Socioecon. and cultural status					0.730***	0.730***	0.729***	0.730***	0.731***
Girl					0.428***	0.427***	0.427***	0.428***	0.429***
Foreign language					1.449***	1.454***	1.455***	1.448***	1.448***
Reading score natives						0.992*			
Educationally poor natives							1.031**		
Range of reading score								1.004	
GDP per capita									1.003
VPC country	0.201**	0.12-	0.103***	0.071***	0.068***	0.059***	0.054***	0.066***	0.068***
$\sigma^2_{v0} / (\sigma^2_{v0} + \sigma^2_{u0} + \text{IP}_{/3})$		0.194							
VPC school	0.207***	0.190-	0.215***	0.143***	0.137***	0.139***	0.140***	0.137***	0.136***
$\sigma^2_{u0} / (\sigma^2_{v0} + \sigma^2_{u0} + \text{IP}_{/3})$		0.229							
McKelvey & Zavoina R <sup>2</sup>			0.045	0.267	0.325	0.341	0.344	0.328	0.323

The first model is an empty model without predictors, which allows for a decomposition of the overall variance across the different levels. We see that a multilevel model is appropriate since 20 percent of the overall variance are due to differences between countries and schools, respectively. The first five models depicted in the second column include one predictor of the country level at a time. If the gini index is the only independent variable the model estimates a highly significant positive effect, i.e. the higher the gini index in a country, the higher is the individual risk of educational poverty. Among the other factors at the country level, only the social contributions have a significant impact on the risk of educational poverty, both of these “equality” indicators show effects that confirm our hypothesis, i.e. more income equality and more redistribution are associated with less income inequality.

The next model (6) now includes all country level predictors depicting aggregated “gross” effects; this means that possible composition or selection effects are not ruled out in this model. There are only two significant effects: the higher the gini index, the higher is the risk of educational poverty. If the gini index is controlled for, the effect of re-distribution is no longer significant. By contrast, the size of the immigrant population in a country now turns significant: the bigger the immigrant population in a country, the lower is the individual risk of poor education. The variance partition coefficient shows that the variance of the country level is reduced by one half after controlling for the independent variables at the country level. Model 7 additionally accounts for school level predictors. Strikingly, the effect of income inequality is no longer significant if the average socioeconomic status of schools and the range of achievement at schools are controlled for. This suggests that countries with a higher average SES of schools are countries with lower income inequality. On the other hand, the risk-reducing effect of re-distributions gains significance.

Model 8 now controls for composition effects by accounting for relevant factors at the student and household level. Second generation students as well as students with a higher socioeconomic status and girls have a lower risk of being educationally poor, whereas students who mainly speak a foreign language at school have a an almost 50 percent higher risk of being

educationally poor. At the country level, the effect of re-distribution now has become significant. Once composition is controlled for, immigrants in a country with higher social contributions face a lower risk of failing at school. The same still holds for countries with bigger immigrant populations. In this model, the variance at the country level is reduced to about seven percent. The next four models control for “level effects” by including indicators of overall educational performance and economic productivity. The higher the average achievement of natives, the lower is the risk for immigrants to fail at school. It seems that overall performance of the educational system is confounded with equality. The effect of re-distribution is no longer significant, indicating that countries with a high performance are countries with strong redistribution. The same holds if one controls for the share of educationally poor natives, whereas the range of achievement as well as GDP do not have significant effects, accordingly the equality dimensions again gains significance in the last two models. The pseudo-r<sup>2</sup> shows that model 9 and 10, e.g. the “full” models controlled for system performance are the best fitted models.

Until now we treated immigrants as one rather homogeneous group, controlling only for generation status, socioeconomic and cultural background and language use. However, theory and research on immigrant integration have repeatedly shown that “immigrants are not like immigrants”, meaning that there are significant differences between immigrants coming from different origins. In our first model we controlled for destination and community effects but not yet for origin effects. Table 3 gives the result of another multilevel model which controls for origin of immigrants by including dummy variables for the respective origin regions at the student level. The sample has become smaller since the information on origin is not available for all students, which involves that the number of destination countries is reduced to 22. The empty model (0) gives information about the distribution of the overall variance across the different levels. Compared to the bigger sample with 38 countries only about 10 percent of the overall variance in educational poverty go back to differences between destination countries.

**Table 3: odds ratios**

	<i>Model 0</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
<i>Origin</i>					
Western Europe		Ref.	Ref.	Ref.	Ref.
Middle East & Maghreb		4.730***	4.548***	3.089***	2.812***
India, Pakistan, Afghanistan		3.317***	3.229***	2.649**	2.104**
Eastern Europe		1.487	1.487	1.353	1.285
Caribbean		7.214***	6.636***	4.133***	3.912***
USA		2.646	1.962	2.289	2.018
Africa (Sub-Sahara)		3.673***	3.434***	2.519***	2.277**
Former Soviet Union		1.536	1.469	1.405	1.252
Former Yugoslavia		2.965***	2.926***	2.164***	1.852**
South America		4.328***	3.458***	2.683**	2.347***
South-East Asia, China		0.553	0.548	0.748	0.468
Southern Europe		2.651***	2.622***	1.966***	1.618*
<i>Country</i>					
Gini Index			1.036	0.956 <sup>o</sup>	0.967



Social contributions	1.001	1.004	1.002		
Share of immigrants	0.988	0.998	0.994		
Homogeneity of immigrants	1.145	0.693	1.020		
Policy: increase immigration	1.022	0.909	0.871		
<i>School</i>					
Private school		0.821	0.899		
Autonomy (staffing)		0.786 <sup>o</sup>	0.760 <sup>o</sup>		
large city		1.008	1.026		
Share of immigrants		0.747	0.760		
Range reading achievement		1.005 <sup>***</sup>	1.005 <sup>***</sup>		
Average SES		0.133 <sup>***</sup>	0.157 <sup>***</sup>		
<i>Student</i>					
First generation				Ref.	
Second generation				0.674 <sup>***</sup>	
Socioecon. And cultural status				0.828 <sup>***</sup>	
Girl				0.401 <sup>***</sup>	
Foreign language use				1.438 <sup>***</sup>	
VPC country	0.108 <sup>**</sup>	0.069 <sup>**</sup>	0.064 <sup>**</sup>	0.035 <sup>**</sup>	0.031 <sup>**</sup>
$\sigma^2_{v0}/(\sigma^2_{v0} + \sigma^2_{u0} + \text{IP}_{/3})$					
VPC school	0.248 <sup>***</sup>	0.249 <sup>***</sup>	0.240 <sup>***</sup>	0.163 <sup>***</sup>	0.153 <sup>***</sup>
$\sigma^2_{u0}/(\sigma^2_{v0} + \sigma^2_{u0} + \text{IP}_{/3})$					
McKelvey & Zavoina R <sup>2</sup>		0.048	0.050	0.244	0.297

The first model controls for differences due to origin, which reduces the country level variance by about one third. We see that immigrants from the Caribbean have the highest risk of being educationally poor (when compared with immigrants from Western Europe). Immigrants from the Middle East, Maghreb and South America have a four times higher risk of being educationally poor than immigrants from Western Europe. There is no significant difference between immigrants from Eastern Europe, the USA, the former Soviet Union, and South-East Asia and China and those from Western Europe. Adding the destination country variables of equality and diversity (model 2) reveals no significant effect and only little more explained variance. At the school level (model 3) the average socioeconomic status and the achievement dispersion, as well as the autonomy in staffing show significant effects, these factors explain much more variance than origin and destination countries alone (McKelvey & Zavoina R<sup>2</sup>=0.24). The last model finally controls for composition effects due to student level characteristics. Compared to the first model some of the origin effects lost significance and strength. Overall, there are still significant differences between different origin groups, strongly suggesting not to treat immigrants as a homogenous category. The destination effects of equality and diversity do not contribute to the explained variance, which is probably due to the substantially smaller sample used for this model.

## ***Conclusion***

Our paper aimed at assessing the structural causes of immigrant's educational poverty. Previous research has shown that some countries exhibit better structural integration outcomes

than others. However, in many countries a significant part of young immigrants is threatened by an exclusion from societal integration mechanisms as a consequence of poor education. Educational poverty is not only a result of individual capabilities and opportunities but it is shaped by institutions. Until now, a systematic assessment of the relationship between host country institutions and immigrant's educational decisions is missing. This does not only hold for the scarce empirical evidence but also for a theoretical linkage between specific macro structures and individual behaviour. We tried to make a first attempt to overcome these research gaps. Our main focus lied on the impact of socio-cultural and institutional effects of destination countries, controlled for compositional effects at the student and school level. We referred to hypotheses and findings from comparative educational and political economy research. By building on Esser's SEU-model of immigrant's investment decisions we assumed that equality as well as diversity of host countries influence educational decisions of immigrants. We hypothesised that states with low income inequality and pronounced redistribution provide advantageous opportunities for immigrants to take the risk of insecure investments in education. We further supposed that the degree of diversity in a country prevents the formation of ethnic boundaries, thereby fostering integration.

Our results suggest that national institutions might indeed trigger these expected effects. Income inequality seems to increase the risk of educational poverty, whereas experience with immigration measured as the size of the immigrant population reduces the individual risk of educational poverty. If individual and school characteristics are controlled for, the effect of income inequality loses significance whereas social contributions as an indicator for redistribution gain significance (e.g. more redistribution leads to less educational poverty). If the average achievement of natives as an indicator of general performance of the educational system is controlled for, the effect of redistribution is no longer significant, suggesting that high performing countries are also countries with more redistribution.

Thus, our hypotheses are partly confirmed, though the significance of the macro effects is low. This means that our approach and our results are not yet conclusive. International comparative multilevel designs often face the problem of low case numbers at the highest level or of insufficient control of relevant factors due to missing data at the country level. A further shortcoming is our data base; the PISA survey provides valuable information allowing for an international comparison of educational processes. However, since the data is cross-sectional they do not permit the assessment of actual causal effects on educational behaviour. Furthermore, the survey is not particularly suited for the study of immigrant integration. Nevertheless, our paper provides valuable hints for further research and proves that the

societal context of destination countries serves as a frame of reference and opportunity structure that has to be included in the analysis of immigrant integration processes.

Our results also show that research on the interplay between welfare state institutions and immigration and integration processes has to take into account the individual level in order to be able to distinguish the effects of specific institutions. Considering our results as well as previous research, it becomes obvious that immigrant integration is the result of complex processes. Even if the multidimensionality of individual social integration seems to be theoretically undisputed, empirical approaches often extrapolate from evidence in one dimension to other dimensions. We see that national institutions can have different or even contrary effects even for one and the same dimension of integration. The institutional setting of liberal welfare states might have positive effects on labour market integration but negative effects on educational or residential integration. Furthermore, effects can vary across different immigrant generations. Our paper corroborates the importance of a precise distinction of varying effects and findings in order to be able to make reliable statements.

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